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Small engineering firm pushes electric envelope

Shelly Strom

Business Journal staff writer

Local electrical consulting firm Reyes Engineering is set to wrap up work on a two-year project to bring fuel cell-produced electricity to a remote botanical garden in Hawaii.

Reyes founder and President Flaviano Reyes said the project is noteworthy for the firm because it provided a "rare opportunity" to work with cutting-edge design. Northwest firms "are doing a lot of great design work here in Portland and in other parts of the country," Reyes said.

Although the company's bread and butter has been traditionally designed electrical, lighting and fire alarm projects for clients in segments that include health care, government, transportation and industry, a growing number of requests are for alternative power.

Officials at the more than 1,000-acre National Tropical Botanical Garden in Kaua'i, Hawaii, tapped Reyes Engineering to design a fuel cell system that can produce enough electricity to run a 2,000-square-foot visitor center.

"Anything that we can do to continue to preserve our planet and to preserve our environment here is something we're interested in," said Chipper Wichman, National Tropical Botanical Garden acting director.

"The project is not economically viable but it provides a demonstration of what might happen in the future," Wichman said. Kaua'i's electricity costs less in the long run than the cost of the fuel cell system. The project will cost an estimated \$500,000 to design and build. Congress helped fund the privately funded garden in 1964.

Reyes Engineering, founded in 1999, placed 14th on The Business Journal's 2004 Fastest-Growing Private 100 list. The company reported 2003 revenue of \$534,000, up 154 percent from 2002 revenue of \$273,000. The Southeast Portland-based company employs 10 people.

Reyes designers created a hybrid system -- fuel cells run with either solar power or hydrogen gas -- that will be nearly silent, won't produce pollution and will provide more than enough electricity to power the visitor center. Excess electricity will be fed onto Kaua'i's power grid.

Fuel cells, a technology more than a century old, have been used in NASA space operations since the 1960s but have largely been too expensive to become widely adopted throughout the country. Fuel cells, stationary and usually small, typically convert hydrogen and oxygen into electricity and heat. Water is the byproduct.

Although power generated by fuel cells is relatively expensive compared with the cost of traditional grid power in most parts of the country, the technology is becoming more accessible. For instance, several electronics manufacturers announced last month that they are near to introducing fuel cell-powered consumer products.

Finland-based Nokia is testing wireless mobile telephone headsets powered by fuel cells that could be introduced to consumers

in several years.

But others expect to release consumer products sooner. Unveiling what it declared to be the world's smallest fuel cell June 24, Toshiba reportedly expects to begin selling a methanol-powered unit in coming months. Japan-based NEC has unveiled a fuel cell-powered laptop computer that it expects to begin offering retailers later this year. A variety of other companies, including Intel-funded startup PolyFuels, Hitachi and Germany-based Smart Fuel Cells reportedly are working on methanol-powered fuel cell units for laptops.

Fuel cell applications in buildings have not yet caught on the same way. Reyes said, however, he believes it is only a matter of time until the systems become a reasonable option.

"We've talked with many of the manufacturers of fuel cells and they are reducing their prices significantly," Reyes said.

At the same time, fuel cells will become relatively less expensive if the price of fossil fuel-based power continues to increase. "Our fossil fuels will one day be depleted. We are trying to approach design differently. We don't want to look at a project and do it the way people have been for the past 30 years. We believe in helping clients find renewable energy and other sustainable solutions," he said.

Contact Shelly Strom at [sstrom@bizjournals.com](mailto:ssstrom@bizjournals.com).

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